

Mixing device for mixing gas and combustion air for a gas
burner and gas burner

The invention relates to a mixing device for mixing gas and
5 combustion air for a gas burner according to the
precharacterizing clause of claim 1. The invention also
relates to a gas burner according to the precharacterizing
clause of claim 13.

10 For mixing two gaseous media, in particular combustion air and
fuel gas, for a burner, mixing devices with a venturi nozzle
are used. For instance, DE 197 29 047 C1 discloses a mixing
device for a gas burner for producing a mixture of gas and
15 combustion air which has a housing and a separately formed
venturi nozzle. The mixing device according to the prior art
is accordingly formed at least in two parts, the venturi
nozzle and the housing being configured as separate
subassemblies. According to the prior art, the housing of the
20 mixing device is in this case formed from a metallic material
and the venturi nozzle is formed from a plastic. According to
DE 197 29 047 C1, the venturi nozzle and the housing of the
mixing device are fastened separately from each other on a
supporting plate of a blower. The multipart configuration of
25 the mixing device has the effect of increasing the effort
involved in assembly and production and also the production
costs.

Against this background, the present invention is based on the
problem of providing a novel mixing device for mixing gas and
30 combustion air for a gas burner and of providing a novel gas
burner.

This problem is solved by a mixing device for mixing gas and
combustion air for a gas burner with the features of claim 1.
35 According to the invention, the venturi nozzle is integrated
in the housing in such a way that the housing and the venturi
nozzle are formed as a monolithic unit. The monolithic unit

comprising the housing and the venturi nozzle is preferably formed from plastic.

5 In accordance with the present invention, it is proposed that the venturi nozzle is integrated in the housing of the mixing device in such a way that the housing and the venturi nozzle are formed as a monolithic unit. The venturi nozzle is accordingly an integral part of the housing of the mixing device. As a result, the number of subassemblies to be
10 produced is reduced. This minimizes the effort involved in production and assembly and also the production costs.

According to a preferred development of the invention, the monolithic unit, formed from plastic and comprising the
15 housing and the venturi nozzle, is fastened on a metallic supporting plate of the housing by means of a bayonet closure. Also acting on the monolithic unit comprising the housing and the venturi nozzle is a gas regulating device, a gas outlet stub of the gas regulating device being insertable into a
20 corresponding recess in the monolithic unit. The gas regulating device is fastened to the monolithic unit comprising the housing and the venturi nozzle by means of a snap closure.

25 The gas burner according to the invention is defined in claim 13.

Preferred developments of the invention are provided by the subclaims and the description which follows. An exemplary
30 embodiment of the invention is explained in more detail below on the basis of the drawing, without the invention being restricted to this embodiment. In the drawing:

Figure 1 shows a mixing device according to the invention for
35 mixing gas and combustion air for a gas burner together with a gas regulating device and a mounting plate of a blower, in cross section; and

Figure 2 shows the mixing device according to the invention for mixing gas and combustion air for a gas burner, in a view turned through 90° out of the plane of the drawing according to Figure 1, but without the gas regulating device.

The present invention is described below in greater detail with reference to Figures 1 and 2.

Figure 1 shows a mixing device 10 according to the invention in cross section, not only the mixing device 10 according to the invention but also a gas regulating device 11 and a supporting plate 12 of a blower being represented in Figure 1. In accordance with the present invention, a housing and a venturi nozzle of the mixing device 10 are formed as an integral, and consequently monolithic, unit. The housing of the mixing device 10 is illustrated in Figure 1 by a reference numeral 13, the venturi nozzle by a reference numeral 14.

The monolithic unit comprising the housing 13 and the venturi nozzle 14 forms a flow duct for gas and combustion air. At an inlet opening 15 of this flow duct, combustion air can be sucked in. At an opposite outlet opening 16 of the flow duct, the blower with the supporting plate 12 acts, and provides a suction pressure to suck in the mixture of gas and combustion air at the outlet opening 16.

A recess in which a gas outlet stub 17 of the gas regulating device 11 engages is provided in the housing 13 of the mixing device 10, in a portion between the inlet opening 15 and the outlet opening 16. This recess is extended in length by a gas-routing duct 18, which opens out into the flow duct extending between the inlet opening 15 and the outlet opening 16, and therefore introduces the fuel gas through an opening which opens out radially into the flow duct.

In accordance with the present invention, the monolithic unit comprising the housing 13 and the venturi nozzle 14 is formed

from a plastic. The monolithic unit formed from plastic and comprising the housing 13 and the venturi nozzle 14 is fastened on the metallic supporting plate 12 of the blower, to be precise in accordance with the present invention by means of a quick-acting closure formed as a bayonet closure 19. For this purpose, as Figure 2 reveals, recesses 20 into which correspondingly shaped projections or lugs 21 of the housing 13 of the mixing device 10 can be introduced are provided in the supporting plate 12. The projections 21 are in this case assigned to the end on the outlet side of the monolithic unit comprising the housing 13 and the venturi nozzle 14. After the projections 21 have been introduced into the recesses 20 of the supporting plate 12 and after the monolithic unit and the supporting plate 12 have been turned in relation to each other, the projections 21 secure the mixing device 10 in its position on the supporting plate 12 of the blower. The bayonet closure 19 accordingly serves for the quick, releasable fastening of the mixing device 10 on the supporting plate 12 of the blower. The fastening can take place without any additional auxiliary means. The connection between the mixing device 10 and the blower is accordingly reversible and can be released again.

As Figure 1 reveals, the depth to which the end on the outlet side of the monolithic unit comprising the housing 13 and the venturi nozzle 14 can be pushed into the supporting plate 12 of the blower is limited by a stop 22. In a way similar to the projections 21, the stop 22 is assigned to the end on the outlet side of the housing 13.

As Figure 1 also reveals, the fastening of the monolithic unit comprising the housing 13 and the venturi nozzle 14 on the supporting plate 12 of the blower is sealed by a sealing device 23. The sealing device 23 is configured as a so-called O-ring and ensures the integrity of the seal of the connection, even over a relatively long operating time, during which the mixing device 10 produced from plastic may undergo material changes or deformations.

The gas regulating device 11 is likewise fastened on the monolithic unit comprising the housing 13 and the venturi nozzle 14 by means of a quick-acting closure. As already mentioned, for fastening the gas regulating device 11 on the monolithic unit, the gas regulating device 11 engages with the gas outlet stub 17 in the corresponding recess within the monolithic unit. After the gas outlet stub 17 has been introduced or inserted into this recess, a securing clip 24, assigned to the monolithic unit, grips at least partially around the gas outlet stub 17 in the manner of a snap closure. The connection of the gas regulating device 11 to the monolithic unit comprising the housing 13 and the venturi nozzle 14 can accordingly also take place without any auxiliary means. By pulling the securing clip 24 back or out, the connection of the gas regulating device 11 and the monolithic unit can be released, and the gas regulating device 11 can be separated from the monolithic unit comprising the housing 13 and the venturi nozzle 14 or pulled out from it.

The fastening of the gas regulating device 11 on the monolithic unit comprising the housing 13 and the venturi nozzle 14 by means of the gas outlet stub 17 is also sealed by means of a sealing device 25. This sealing device 25 is also configured as a so-called O-ring and provides permanent sealing of the releasable connection between the gas regulating device 11 and the mixing device 10.

As Figure 1 reveals, a gas nozzle 26 is positioned in the region of the gas outlet stub 17. The gas nozzle 26 is configured as a separate component and protrudes into the gas outlet stub 17.

In accordance with the present invention, a mixing device for a gas burner in which the venturi nozzle 14 is an integral part of the housing 13 is accordingly proposed. The monolithic unit comprising the housing 13 and the venturi nozzle 14 is in this case preferably produced from a plastic.

Furthermore, it is in accordance with the present invention to fasten the mixing device 10 formed in this way on a metallic supporting plate 12 of a blower by means of a bayonet closure. A gas regulating device 11 engages with a gas outlet stub 17
5 in a recess of the mixing device 10 according to the invention, the connection of the gas regulating device 11 and the mixing device 10, that is to say the monolithic unit comprising the housing 13 and the venturi nozzle 14, taking place by means of a snap closure.

List of designations

	10	mixing device
	11	gas regulating device
5	12	supporting plate
	13	housing
	14	venturi nozzle
	15	inlet opening
	16	outlet opening
10	17	gas outlet stub
	18	gas-routing duct
	19	bayonet closure
	20	recess
	21	projection
15	22	stop
	23	sealing device
	24	securing clip
	25	sealing device
	26	gas nozzle